

USSR

UDC 621.317.799:537.511.33 (088.8)

ASI, A.A., TCOMSCO, G.K.

"Method Of Measurement Of Temperature Of P-N Junction Of Semiconductor Device"

USSR Author's Certificate No 305524, filed 13 Sept 68, published 16 July 71
(from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 28376P)

Translation: A method is proposed for measurement of the temperature of a p-n junction of a semiconductor device (which has a controlled avalanche formation in the reverse direction) by supply of a measuring current to the junction, measurement of the voltage, and determination of the temperature by means of calculations. With the object of increasing the precision of measurement, a measuring current of constant magnitude corresponding to a regime of avalanche breakdown is passed in the reverse direction.

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USSR

UDC: 621.382:621.317.799

ASI, A. A., TOOMS00, G. K.

~~"A Method of Measuring the Temperature of an Electron-Hole Junction in a Semiconductor Device"~~

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 18, Jun 71, Author's Certificate No 305524, Division H, filed 13 Sep 68, published 4 Jun 71, p 178

Translation: This Author's Certificate introduces a method of measuring the temperature of an electron-hole junction in a semiconductor device which has controllable avalanche formation in the reverse direction. The procedure involves sending a measurement current through the junction, measuring the voltage, and calculating the temperature. As a distinguishing feature of the patent, measurement precision is improved by passing a current corresponding to avalanche breakdown in the reverse direction through the junction.

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USSR

UDC: 621.375.82

RUBINOV, A. N., ASIMOV, M. M.

"Time Dependence of Amplification in a Solution of Rhodamine-6G With Lamp Stimulation"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 108-110

Abstract: The time dependence of amplification is measured for an ethanol solution of Rhodamine-6G stimulated by standard flash lamps with pulse duration of 80 μ s. The maximum amplification factor is attained considerably before the stimulating pulse reaches its maximum. It is experimentally shown that when the chemical purity of the solution is inadequate, reversible absorption arises in place of amplification, which can be attributed to the increased probability of singlet-triplet conversion. Two illustrations, bibliography of eleven titles.

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1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--PACKING OF MACROMOLECULES IN POLYMERS -U-
AUTHOR--(03)--SLONIMSKIY, G.L., ASKADSKIY, A.A., KITAYGORODSKIY, A.I.
COUNTRY OF INFO--USSR
SOURCE--VYSOLOMOL. SOEDIN., SER. A 1970, 12(3), 494-512
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--MACROMOLECULE, POLYMER, SPECIFIC DENSITY, ISOMER, CALCULATION,
MOLECULAR STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1995/1189 STEP NO--UR/0459/70/012/003/0494/0512
CIRC ACCESSION NO--AP0116654
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0116654

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PACKING FACTOR (K) OF 70 VARIOUS ALIPHATIC AND AROMATIC POLYMERS WAS CALCD. (K EQUALS 0.664-0.697). THE PACKING D. OF VARIOUS AMORPHOUS AND PARTIALLY CRYST. POLYMERS WAS QUITE SIMILAR IN THE 1ST APPROXN. SUBSTITUTION OF POLAR GROUPS FOR NONPOLAR ONES LED TO INCREASED D., PRESUMABLY DUE TO INCREASED MASS RATHER THAN VOL. CONTRACTION. THE D. OF THE POLYMERS WAS CALCD. FROM CHEM. STRUCTURE DATA OF THE REPEATING UNIT, WHICH OFFERED A MEANS FOR PREDICTING THE PROPERTIES OF A POLYMER PRIOR TO SYNTHESIS. ISOMERIC POLYMERS WERE SUBDIVIDED INTO 2 GROUPS, VIZ., ISOMERS HAVING IDENTICAL INTRINSIC VOL, AND ISOMERS HAVING DIFFERENT VOLS. THE LATTER POLYMER HAD MARKEDLY DIFFERENT PROPERTIES. FACILITY: INST. ELEMENTOORG. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

272 032

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111491

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LOW TEMP. POLYCONDENSATION OF 3,3 PRIME, DIHYDROXYBENZIDINE AND OF 4,4 PRIME, DIHYDROXY, 3,3 PRIME, DIAMINODIPHENYL SULFONE WAS CARRIED OUT WITH P, (P, CLCOC SUB6 H SUB4 J) SUB2 C SUB6 H SUB4, P, (P, CLCOC SUB6 H SUB4 S) SUB2 C SUB6 H SUB4, AND (P, CLCOC SUB6 H SUB4 S) SUB2 TO GIVE POLYAMIDES (I). SUBSEQUENT DEHYDRATION OF I GAVE POLYBENZOXAZOLES (II, WHERE R IS DERIVED FROM THE DIACID CHLORIDE AND R PRIME IS DERIVED FROM THE DIAMINE). THE PRESENCE OF O, S, OR SO SUB2 BRIDGES IN II INCREASES THE TEMP. RANGE IN WHICH II RETAIN THEIR ELASTICITY, INCREASES THEIR TENSILE STRENGTH AT BREAK AND ELONGATION AT BREAK.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--HEAT RESISTANCE OF POLYMERS -U-
AUTHOR--(03)-SLONIMSKIY, G.L., ASKADSKIY, A.A., MZHELSKIY, A.I.
COUNTRY OF INFO--USSR
SOURCE--VYSOKOMOL. SOEDIN. SER. A 1970, 12(5), 1161-79
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--CHEMICAL STABILITY, MATHEMATIC EXPRESSION, HEAT RESISTANT
PLASTIC, THERMAL STABILITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3006/1262 STEP NO--UR/0459/70/012/005/1161/1179
CIRC ACCESSION NO--AP0134936
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134936

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HEAT RESISTANCE OF POLYMERS IS DISCUSSED IN QUANT. MATH. TERMS. THE SHAPE CONSTANCY, STRESS DISTRIBUTION, AND STRESS PRESERVATION ARE THE MAIN STABILITY PARAMETERS. EQUATIONS WERE DEDUCED WHICH EXPRESS THE RELATION BETWEEN THESE PARAMETERS AND TEMP. FACILITY: INST. ELEMENTOORG. SOEDIN., MOSCOW, USSR.

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Acc. Nr.

AP0048827

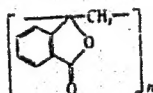
Abstracting Service:
CHEMICAL ABST.

5-78

Ref. Code
UR0459

3

90903k Synthesis and behavior of poly(methylenephthalide). Vinogradova, S. V.; Salazkin, S. N.; Koshak, V. V.; Chelidze, G. Sh.; Slonimskii, G. L.; Askadekii, A. A.; Mikhelskii, A. I. (Inst. Elementoorg. Soedin., Moscow, USSR). *Vysokomol. Soedin.* Ser. A 1976, 12(1), 205-13 (Russ.). The title polymer (I) was prepd. by bulk, emulsion, and soln. polymn. of methylenephthalide (II) in the presence of peroxides or $\text{BF}_3 \cdot \text{HCONMe}_2$. II was also thermally polymd. in HCONMe_2 in air at 60° to give I of



di

higher mol. wt. than I obtained similarly under argon. Increasing the temp. to 80° had no effect on the I yield and viscosity. I with reduced viscosity 0.5-0.7 dl/g (0.5% HCONMe_2 , 25°) was obtained by soln. polymn. of II in the presence of Bz_2O_2 or $(\text{NH}_4)_2\text{S}_2\text{O}_8$. Soln. polymn. of II was solvent-sensitive. I with

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REEL/FRAME
19800591

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max. reduced viscosity (0.85 dl/g) was obtained by polymn. of Ia in HCONMe₂ at 70° in the presence of BF₃·HCONMe₂. Increasing the reaction time raised the I yield sharply. II was also built copolymd. with other monomers, esp. styrene, acrylonitrile, and Me methacrylate, in the presence of Bz₂O₂ to give high yields of copolymers with high reduced viscosity. All copolymers were solids, sol. in the same solvents (CF₃CO₂H, Me₂SO, etc.) as I. I had softening point 300° and good thermal stability. DBJR

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ASKADSKIY A.A.

Acc. Nr:

AA 0051019

Abstracting Service:
CHEMICAL ABST. 5-7c

Ref. Code:

UK 0000 4

101534u Plastic antifriction material. Korshak, V. V.; Vinogradova, S. V.; Slonimskii, G. I.; Gribova, I. A.; Chumalevskaya, A. N.; Krasnov, A. P.; Fomina, Z. Ya.; Askadskii, A. A. (Institute of Heteroorganic Compounds, Academy of Sciences, U.S.S.R.) Brit. 1,179,400 (Cl. C 10m), 28 Jan 1970, Appl. 29 Jun 1967; 3 pp. Antifriction materials with little self-adhesion and low coeff. of friction were prepd. by compression molding polyesters contg. >3% P with 30-70% MoS₂ and powd. Cu fillers. Thus, a 0.5-0.5-1.0 isophthaloyl dichloride-MePOCl-phenolphthalein mixt. was polycondensed in a chlorinated diphenyl solvent at 220° and 4.0 g of the polyester obtained was blended with 6 g MoS₂ and 4 g powd. Cu for 3-5 min before compression molding at 220-50° and 1000-1500 kg/cm². Polyesters contg. P were also prepd. by condensing terephthaloyl chloride with phenolphthalein and p,p'-methylphosphinyldenebis(benzoyl chloride) and were used either alone or were blended with phenolphthalein-phenol-formaldehyde resins. CQPN

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ASKADSKIY A.A.

Acc. Nr.

AP0045179

Abstracting Service:

CHEMICAL ABST.

5-50

Ref. Code

UR0191

2

91225c Physicomechanical properties of adhesive cyanoacrylate compositions. Korshak, V. V.; Polyakova, A. M.; Mager, R. A.; Semvantsy, V. N.; Askadskii, A. A.; Gerashchenko, Z. V. (USSR). *Plast. Massy* 1970, (1), 44-5 (Russ). Adhesive compns., e.g., Et α -cyanoacrylate (I), Pr α -cyanoacrylate, Bu α -cyanoacrylate, and allyl α -cyanoacrylate were modified with plasticizers and thickening agents. Addn. of 20% ethylene glycol dimethacrylate or diallyl phthalate reduced the elastic modulus of polyethyl α -cyanoacrylate (II). Addn. of 20% di-Bu phthalate and 10% II to I compns. gave adhesives of superior adhesive bond strength and low elastic modulus. Some monomers were also effective as plasticizers of adhesive compns. Best results were obtained with 20% Et α -cyanosorbate. CKJR

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REEL/FRAME

19780079

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Mining

USSR

UDC:550.93

BIGAYEVA, A. R., KHUSNUTDINOV, R. I., ASKAROV, F. A.

"The Accuracy of Determination of the Absolute Age of Geological Formations by the K/Ar Method"

Tashkent, Uzbekskiy Geologicheskii Zhurnal, No. 6, 1970, pp. 20-23

Abstract: The potassium-argon method, based on determination of the quantity of radiogenic Ar^{40} accumulated in a specimen since its formation as a result of natural decay of K^{40} , is one of the most widespread methods of determining the absolute age of geological formations. This article presents mathematical formulas for determination of the relative mean square error in the measurement of absolute age. This error is found to depend on the mean square errors in determination of Ar^{40} and K. Another formula indicates the dependence of mean square error on age with identical measurement errors for the contents of the two materials. The error decreases with increasing specimen age.

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Ion Exchange

USSR

UDC 661.185.223

NAZIROVA, R. A., DZHALILOV, A. T., FATKHULLAYEV, E., and ASKAROV, M. A.,
Tashkent Polytechnical Institute

"Study of the Properties of Ion Exchange Membranes Based on Furan Ion
Exchange Resins"

Tashkent, Uzbekskiy Khimicheskiy Zhurnal, No 6, 1973, pp 15-17

Abstract: Thermal stability of ion exchange membranes obtained from furan
ion-exchange resins was investigated by means of the thermographic and
thermogravimetric method. It was established that such membranes are highly
stable in water -- up to its boiling point. In the air they were heat re-
sistant up to the temperatures of 100 to 120°C.

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Ion Exchange

USSR

UDC 661.182.12.62.278.572.772.2

ASKAROV, M. A., DZHALILOV, A. T., NAZIROVA, R. A., FATKIRULLAYEV, E.

"Synthesis of Interpolymer Ionite Membranes of Furan Ionites"

Tashkent, Uzbekskiy Khimicheskiy Zhurnal, No 2, 1972, pp 43-45.

Abstract: Heterogeneous membranes based on furan ionites have good mechanical strength and thermal stability but insufficient electrochemical properties. In order to produce ionite membranes with good mechanical strength, thermal stability and high electrochemical properties, the authors synthesized interpolymer membranes by molecular combination of polyelectrolytes with thermoplastic polymers. The basic condition of synthesis of the interpolymer membranes is selection of a common solvent for the polyelectrolyte and inert polymer providing for their molecular combination. Interpolymer membranes are distinguished from heterogeneous membranes by their high exchange capacity and electrochemical properties. Thus, the interpolymer membranes produced, due to their high physical-chemical and electrochemical properties, can be used in processes of demineralization of water on electrodialysis installations.

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1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--COPOLYMERIZATION OF ACRYLONITRILE WITH AMINO ESTERS OF
ALPHA,BETA,UNSATURATED ACIDS -U-
AUTHOR-(02)-ASKAROV, M.A., MALTSEVA, L.V.
COUNTRY OF INFO--USSR
SOURCE--UZB. KHIM. ZH. 1970, 14(1), 31-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--COPOLYMERIZATION, ACRYLONITRILE, AMINE DERIVATIVE, ESTER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1837 STEP NO--UR/0291/70/014/001/0031/0034
CIRC ACCESSION NO--AP0123626
UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--RADICAL EMULSION POLYMERIZATION IN THE PRESENCE OF A BENZOYL
PEROXIDE AMINATED POLYSTYRENE BINARY INITIATING SYSTEM IN AN ALKALINE
AUTHOR--(03)-TRUBITSYNA, S.N., RUZMETOVA, KH.K., ASKAROV, M.A.

COUNTRY OF INFO--USSR

SOURCE--UZB. KHIM. ZH. 1970, 14(2), 67-70

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--EMULSION POLYMERIZATION, BENZOYL PEROXIDE, POLYSTYRENE RESIN,
METHYL METHACRYLATE, POLYMETHYLMETHACRYLATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0922

STEP NO--UR/0291/70/014/002/0067/0070

2/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0123626
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS WERE STUDIED AND THE
REACTIVITY RATIOS (R), SP. ACTIVITY FACTORS (Q), AND POLARITY FACTORS
(E) WERE DED. OF THE COPOLYM. BETWEEN H SUB2 C:CHCN (I) AND H SUB2
C:CH SUB2 CH SUB2 NR SUB2 (R IS ET, BU, OR PH). FACILITY: INST.
KHIM., TASHKENT, USSR.

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0137950

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLYSTYRENE (I) OF MOL. WT. 14.5 TIMES 10 RPIME3 AMINATED WITH PYRIDINE WAS USED AS AN EMULSIFIER IN THE POLYMN., IN AN ALK. MEDIUM, OF ME METHACRYLATE AT 20DEGREES IN THE PRESENCE OF BZ SUB2 O SUB2. THE SYSTEM BZ SUB2 O SUB2 AMINATED I WAS AN ACTIVE INITIATOR; IN THE ALK. MEDIUM THE CARBINOL BASE OF AMINATED I WAS FORMED WHICH REACTED WITH BZ AUB2 O SUB2 GIVING BENZOATE RADICALS INITIATING THE POLYMN. SYNDIOTACTIC STRUCTURE OF OBTAINED POLY(ME METHACRYLATE) WAS CONFIRMED BY IR ANAL.; ITS GLASS TRANSITION TEM. WAS 120DEGREES AND M.P. 240DEGREES. FACILITY: TASHKENT. POLITEKH, INST., TASHKENT, USSR.

UNCLASSIFIED

USSR

UDC 620.179.16

ASKAROV, M. A., YAKUSHKO, G. YE., BEZHANOV, R. A.

"An Ultrasonic Defectoscope for the Automatic Monitoring of Large-Diameter Pipes"

Trudy Tbilisskogo Nauchno-Issledovatel'skogo Elektrotekhnicheskogo Instituta (Works of the Tbilisi Electrical Engineering Scientific Research Institute), No 5, 1970, pp 81-85 (from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 7, 1970, Abstract No 7.32.972

Translation: In the article is described an ultrasonic defectoscope for the automatic monitoring of large-diameter (up to 219 mm) pipes with a wall thickness from 6 to 20 mm, intended for the detection of defects (cracks, pits, foliations, etc.) with dimensions in excess of 2-3 mm. The device has chambers with seeking heads, self-adjusting along the pipe surface; acoustic contact is created by a liquid fed into the chambers, and the defect is registered by an automatic monitor. Note is taken of the high resolving power of the seeking heads, which are provided with

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USSR

ASKAROV, M. A., et al, Trudy Tbilisskogo Nauchno-Issledovatel'skogo Elektrotekhnicheskogo Instituta, No 5, 1970, pp 81-85
(from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 7, 1970, Abstract No 7.32.972)

cylindrical lenses, the focal lines of which are mutually perpendicular. The permissible monitoring speed is up to 28 m/min. 4 figures.

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USSR

RAKHIMDZHANOV, A. R., Professor, ASKAROV, Sh. A., and ZIL'ON, T. S., Department of Neuropathology, Tashkent Institute for the Advanced Training of Physicians

"Polyneuritis in Chlorophos Poisoning"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 5, 1971, pp 67-69

Abstract: Three cases of intoxication with chlorophos (dipterex-a cholinesterase inhibitor) are described. Two young girls drank it with suicidal intent and a 34-year-old male drank it unintentionally. All 3 developed the characteristic symptoms of acute poisoning with nausea, vomiting, and unconsciousness. Polyneuritis began to be manifested 6, 16, and 24 days after ingestion of the insecticide. Pain appeared in the gastrocnemius. Weakness developed in the lower legs and feet and, in one case, in the hands. The achilles tendon and patellar reflexes were absent. Two patients experienced hyperesthesia in the feet and lower legs. Treatment with vitamins, stimulants, physical methods, exercise, and massage resulted in improvement but not complete recovery. One case is described in some detail.

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USSR

UDC 615.779.9:582.288

ASKAROVA, S. A., KHODZHIBAYEVA, S. M., and AZIMKHODZHAYEVA, M. N.,
Department of Microbiology, Academy of Sciences Uzbek SSR

"The Effects of Polyene Antibiotics on the Production of Toxic Substances by
Verticillium Dahliae Fungus"

Tashkent, *Uzbekskiy Biologicheskii Zhurnal*, No 5, 1971, pp 60-61

Abstract: The toxin which is secreted by *Verticillium dahliae* fungus and which causes wilt of cotton and other plants is composed of several fractions, the most toxic one being the brown pigment. Polyene antibiotics obtained from Actinomycetes neutralize that toxin. Antibiotic 2,949 reduces the activity of the various fractions without suppressing production. Antibiotics 18-80 and 18-45 inhibit both the activity and production of all fractions. The best results are obtained with a mixture of all three antibiotics which totally inactivates the *V. dahliae* toxin. Cotton plants treated with the mixture develop no wilt.

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USSR

UDC 632.4.42/49A/z

KRASIL'NIKOV, N. A., KHODZHIBAYEVA, S. M., MIRCHINK, T. G., and ASKAROVA, S. A., Moscow State University

"Toxin Formation in *Verticillium dahliae* Strains Differing in Virulence"

Moscow, Sel'skokhozyaystvennaya Biologiya, No 2, 1971, pp 260-264

Abstract: Toxin was isolated from four groups of *V. dahliae* strains differing not only in morphological and biochemical properties, but also in virulence. The most virulent was group II, followed by groups III, IV, and I. The toxicity of the concentrates was tested by immersing cut cotton shoots in solutions of various dilutions. Toxin from group II wilted the plants in a 1:10,000 dilution, whereas the inhibiting effect of the other toxins was not manifested until 1:1000 and 1:100 dilutions were used. Thus, there is a relationship between the activity and virulence of the various groups of the agent of cotton wilt. *V. dahliae* toxin consists of several fractions, the most toxic being a cinnamon-brown pigment, which is produced by all four fungus groups.

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USSR

UDC 534.214

ASKAR'YAN, G. A.

"The Movement of Particles in a Laser Beam (Supplement) "

Moscow, Uspekhi Fizicheskikh Nauk, Volume 110, No 1, May 73, pp 115 - 116

Abstract: This note is a supplement to the article by Ashkin, translated from Scientific American, which appears in this issue of the Journal.

The primary purpose of the note is to discuss other forces acting on a particle in a laser beam and to provide a brief description of methods for calculating the relative values of these forces and the force of light pressure. The purely electromagnetic forces on such a particle include a gradient force and the force of light pressure. The relative values of these forces depend on particle characteristics (size, index of refraction, etc.) and on the strength, focus, frequency, etc., of the laser light.

If some light is absorbed by the particle or the medium, there are other forces: direct convection (if the medium absorbs energy), radiometric pressure (if the particle absorbs energy and heats the medium), and evaporation from the particle itself.

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USSR

ASKAR'YAN, G. A., Moscow, Uspekhi Fizicheskikh Nauk, Volume 110, No 1, May 73, pp 115 - 116

It should be noted that evaporation from the particle can accelerate macroparticles to very high speeds (10^6 - 10^8 centimeters per second), while a very large gradient force can be used to accelerate electrons to ultra-relativistic speeds.

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USSR

UDC: None

ASKAR'YAN, G. A. and MANUKYAN, S. D.

"Acceleration of Particles by a Moving Laser Focus, Focusing Front, or Ultra-Short Laser Pulse"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 6, 1972, pp 2156-2160

Abstract: This paper discusses the possibilities of using the high gradient of a laser light field to produce an acceleration gradient for electrons. The authors visualize the moving focus of the laser as a beam scanning transversely while its focus is varied longitudinally, with time, by a special lens. They also see the movement of the focusing front realized when various parts of the beam are focused at various points of the beam axis at different moments in time according to a definite law. The conditions for starting the particle acceleration from small initial velocities are considered, and the conditions for ultrarelativistic energy on the part of the accelerated particles are determined. It is shown also that it is possible to inject the particles into acceleration from a cloud of electrons or from a plasma generated by the action of the laser on a target. Finally, it is shown that the movement of the focus can be used for increasing the efficiency of acceleration

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USSR

UDC: None

ASKAR'YAN, G. A., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 6, 1972, pp 2156-2160

of macroscopic particles as well. Members of the P. N. Lebedev Physics Institute, USSR Academy of Sciences, the authors express their gratitude to Prof. M. S. Rabinovich for his comments.

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USSR

ASKAR'YAN, G. A.; ARUTYUNYAN, I. N.; POGOSYAN, V. A. (Lebedev Physics Institute, USSR Academy of Sciences)

"Multiphoton Processes in the Focus of a Powerful Laser Beam with Allowance for Expansion of the Active Volume"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; March, 1970;
pp 1020-4

Abstract: A multiphoton process in the focus of laser radiation or near the focus points of individual modes is considered. It is shown that for high radiation densities saturation and expansion of the active volume occur. This appreciably modifies the dependence of the number of events on the field strength, $N(E) \propto E^k$; in particular, in very strong fields $N \propto E^3$ and does not depend on quantization of the process. Various types of field distribution -- e.g., a cone with a focus constriction or a Gaussian radial distribution -- are considered. Results and conclusions of experiments on multiphoton ionization of atoms and molecules by a laser beam are critically considered. It is noted that the results obtained can be employed for determining the initiating volume of multiphoton ionization in a flash of light.

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USSR

ASKAR'YAN, G. A., MIKHALVICH, V. G., SHIPULO, G. P., Physics Institute imeni P. N. Lebedev, Academy of Sciences, USSR

"Nonlinear Scattering and Self-Focussing of Intense Light by Perturbations of the Medium Near Absorbing Inhomogeneities"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, No 4, 1971, pp 1270-1272

Abstract: A study is made of the refraction of intense light by a halo originating in the transparent medium surrounding an absorbing inhomogeneity. A new effect is observed: namely, self-focussing of the light by an inhomogeneity in the medium. Experiments were conducted in the beam of a continuous yttrium-garnet (YAG -- ND) laser. For visualization of the process, a beam of red light from a helium-neon laser was added to the invisible beam. Scattering and shuttering of the beam, increasing in time due to an absorbing particle in water or in plexiglass, as well as self-focussing in various types of optical glass. The dynamics of the process are investigated by means of motion-picture color photography. Note is taken of the practical significance of the observed effects of nonlinear light scattering by halos near inhomogeneities in natural media (water, air) and in optical and laser elements (platinum particles in
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USSR

ASKAR'YAN, G. A., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki,
No 4, 1971, pp 1270-1272

neodymium glass, carbon particles in a ruby, particles in liquid media, etc.)
which limit the transmission of high intensities. These effects may also be
used for the pulsed scattering, reflection, or modulation of intense light.
3 figures. 6 bibliographic entries.

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USSR

ASKAR'YAN, G. A., POGOSYAN, V. A., Physics Institute imeni P. I. Lebedev,
Academy of Sciences, USSR

"The Heat Track and Self-Focussing of a Powerful Beam in a Medium"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, No 4, 1971,
pp 1295-1299

Abstract: A solution of an unsteady equation of heat propagation during the absorption of a powerful beam of specific profile with an intensity dip near the axis is obtained and investigated. The dynamics of formation and the profile of nonlinear variations of the refractive index of the medium are investigated. Self-focussing conditions for the near-axial part of the beam are obtained for the case of heat flow in time and space. It is shown that unsteadiness of the process is essential for self-focussing. Unsteadiness provides for satisfaction of the conditions of self-focussing at any moment of time in a continuously decreasing near-axial region. 16 bibliographic entries.

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ASKAR'YAN G.A.

RND / R.760 / 5.11.73
 Dec 74 VII. LASER SIMULATION AND RELATED EFFECTS

(2)

Askar'yan, G. A., and S. D. Mamukyan.
 Acceleration of particles by a moving laser
 focus, focusing front, or ultrashort laser
 pulse front. ZhETF, v. 62, no. 6, 1972,
 2156-2160.

An analysis is given of several ways in which the high
 field gradient in a laser pulse can be used to accelerate electrons or
 ions in a controlled fashion. If the mean force exerted on a particle
 in an e-m field of amplitude E_0 (r) and frequency ω is expressed as

$$F = -\frac{e^2}{2m\omega^2} \nabla^2 (E_0^2)_{\text{ave}}$$

then it can be shown that, for example, a neodymium laser generating
 nanosecond pulses in the 30 Gw range will produce an effective field
 E_{eff} of approximately 1 Mv/cm, while a picosecond pulse of 3×10^3 Gw
 will yield 100 Mv/cm. Gradients of this magnitude when given a
 controlled lateral displacement (swept beam) or axial displacement
 (change in focal point or beam divergence) can in theory be used for
 selective particle acceleration. One method for doing this would be
 programmed refocusing of annular portions of the laser wavefront;
 using corresponding portions of a focusing lens; another would be a
 programmed refocusing of the beam along a selected path. In the latter
 case it is shown that a channel with reduced nonlinear absorption can
 be generated for charged particle motion. In the case of low coulomb
 attraction between electrons and ions, electrons would essentially be
 accelerated as if free; at sufficiently high coulomb forces an ion
 acceleration component would appear. In conclusion the authors suggest
 that the moving-focus technique could be extended to provide macroscopic
 particle acceleration.

USSR

ASKAR'YAN, G. A.; SAVCHENKO, M. M.; STEPANOV, V. K. (Lebedev Physics Institute, USSR Academy of Sciences)

"Diamagnetic Moment of a Strong Shock Wave from a High-Temperature Light Explosion in Gases"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; October, 1970;
pp 1133-45

ABSTRACT: Extensive experimental material is presented pertaining to an investigation of diamagnetic perturbations of a strong shock wave from a light spark in various gases at different pressures. A theoretical description of the phenomenon is given on the basis of the theory of strong shock waves. It is shown that a long life of the diamagnetic moment indicates a high temperature of the process in the light spark. Experiments on reflection and focussing of a shock wave and on its cumulative effect on the fire ball of the light spark are carried out with the aim of repeated use of a dense hot plasma. Some new possible effects of interaction between a strong magnetic field and the shock

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USSR

ASKAR'YAN, G. A., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Oct 70, pp 1133-1145

wave plasma are described. Practical applications of the results obtained are mentioned.

The authors express their gratitude to Professor Yu. P. Rayzer for his discussion of the results and L. A. Lapin, V. P. Logvinenko, and I. N. Arutyunyan for their aid in the work.

The article includes four figures. There are 13 bibliographic references.

2/2

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USSR

ASKAR'YAN, G. A.; et al (Lebedev Physics Institute, USSR Academy of Sciences)

"Nonlinear Effects with the Passage of a Powerful, Continuous Light Beam through a Medium"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; December, 1970;
pp 1917-8

ABSTRACT: The passage of a light beam from a continuous neodymium-doped yttrium garnet laser through a medium is studied. The wave length of the light is 1 micrometer; and the power of the light beam, up to 30 watts. Media whose refractive indices have a negative derivative with respect to temperature and which defocus rays of ordinary profile (e. g., water and plexiglass) are investigated. Self-focussing of a ray with a low intensity near the axis (so-called "banana" self-focussing) is obtained for vertical or horizontal passage through water and plexiglass. "Combined" focussing of a ray by the thermal track of another ray is investigated; in this case the red ray of a gas laser was sent along the track of a pipe-shaped infrared ray and focussed in this way. A "tinting" technique is employed for making the nonlinear reaction of powerful, invisible infrared rays visible. For this purpose a visible ray of the same profile is added. Practical applications are indicated.

1/1

Acc. Nr: AP0038036

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 1, pp 133-134

THERMAL SELF-FOCUSSING IN A LIGHT BEAM WITH
LOW INTENSITY NEAR THE AXIS

Askar'yan, G. A.; Chisty, I. L.

Thermal self-focussing in a strong light beam with a low intensity near the axis is investigated. A blue light beam from a 0.3 W continuous argon laser was employed. Self-focussing was particularly pronounced in methylene iodide, alcohol solution of iodine and other liquids. It is shown that self-focussing of the inner part of the beam occurs under stationary conditions with different regimes of convection (vertical and horizontal rays were investigated). Movement of the liquid destroys self-focussing. Black-white and color photographs and moving films of the process have been made.

REEL/FRA
19731078

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USSR

ASKAR'YAN, G. A.; ARUTYUNYAN, I. N.; POGOSYAN, V. A. (Lebedev Physics Institute, USSR Academy of Sciences)

"Multiphoton Processes in the Focus of a Powerful Laser Beam with Allowance for Expansion of the Active Volume"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; March, 1970;
pp 1020-4

Abstract: A multiphoton process in the focus of laser radiation or near the focus points of individual modes is considered. It is shown that for high radiation densities saturation and expansion of the active volume occur. This appreciably modifies the dependence of the number of events on the field strength, $N(E) \propto E^k$: in particular, in very strong fields $N \propto E^3$ and does not depend on quantization of the process. Various types of field distribution -- e.g., a cone with a focus constriction or a Gaussian radial distribution -- are considered. Results and conclusions of experiments on multiphoton ionization of atoms and molecules by a laser beam are critically considered. It is noted that the results obtained can be employed for determining the initiating volume of multiphoton ionization in a flash of light.

1/1

Acc. Nr: **1P0043690**

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 2, pp **647-650**

**SELF-FOCUSING AND FOCUSING OF ULTRASOUND
AND HYPERSOUND IN METALS AND SEMICONDUCTORS**

Askar'yan, G. A.; Pustovoyt, V. I.

Propagation of intense ultrasound and hypersound waves in metals is considered. The possibility of self-focusing is demonstrated and the conditions for its existence are elucidated. It is shown that in a number of metals of practical interest the velocity of sound decreases upon heating; this leads to self-focusing and focusing of the sound waves as a result of heating of the medium near the surface by the factor producing the intense sound wave (modulated laser or electron beam). The sound velocity may also decrease during absorption of the sound wave itself. Mechanisms of variation of the velocity of sound in a semiconductor due to heating are analyzed. It is shown that appreciable changes may occur as a result of variation of the carrier concentration. Some practical applications of the effects which influence conditions of destruction of metals are indicated. Some possibilities of explaining the anomalies in propagation of sound and destruction of the media in the focusing regions are discussed.

REEL/FRAME
19770094

21 DI

Acc. Nr: **AP0043777**

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 3, pp 1020-1024

**MULTIPHOTON PROCESSES IN THE FOCUS
OF A POWERFUL LASER BEAM WITH ALLOWANCE
FOR EXPANSION OF THE ACTIVE VOLUME**

Arutyunian, I. N.; Askar'yan, G. A.; Pogosyan, V. A.

A multiphoton process in the focus of laser radiation or near the focus points of the modes is considered. It is shown that for high radiation densities saturation and expansion of the active volume occurs. This appreciably modifies the dependence of the number of acts on the field strength, $N(E) \sim E^k$; in particular in very strong fields $N \sim E^3$ and does not depend on quantization of the process. Various types of field distribution, e.g. a cone with a focus constriction or a Gaussian radial distribution are considered. Results and conclusions of experiments on multiphoton ionization of atoms or molecules by a laser beam are critically considered. It is mentioned that the results obtained can be employed for determining the initiating volume of multiphoton ionization in a light spark.

REEL/FRA
19770185

21/6/77

ASKEROV, A. A.

Medicine -
Underwater
Sports

MEDICAL SUPERVISION IN THE PURSUIT OF
UNDERWATER SPORTS

JPRS 57439
7 November 1972

Translation of Russian-language monograph edited by A. A. AskeroV,
and V. I. Kromshadskiy-Karev: Vrachebny kontrol pri zanятиyah
podvodnym sportom, 1971, signed to press 18 November 1971, Medicine
Publishing House, 268 pages, UDC: 797.22.093.

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USSR

GANIYEV, M. K., ASKEROV, A. A., MIRZA-ZADE, S. R., and DASHDAMIROV, D. M.

Pasterellllz (Pasteurellosis), Baku, "ELM," 1970, 268 pp

Translation: Table of Contents:

Introduction

Pasteurellosis (Hemorrhagic Septicemia) of Cattle and Buffaloes

Etiology

Morphology

Biochemical Properties

Antigenic Properties

Serologic Properties

Pathogenicity

Toxin Formation

Resistance

Sources and Development

The Role of Ticks in Pasteurellosis Infection

Susceptibility and Routes of Infection

The Carrier State

Role of Environmental Factors in Epizootiology

Pathogenesis

The Clinical Picture

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GANIYEV, M. K., et al., Pasterelliz, Baku, "ELM," 1970, 268 pp

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GANIYEV, M. K., et al., Pasterelliz, Baku, "ELM," 1970, 268 pp

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GANIYEV, M. K., et al., Pasterellez, Baku, "ELM," 1970, 268 pp

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USSR

UDC 621.315.592

ASKEROV, B.M.

"Kinetics Effects In Semiconductors"

Kiniticheskiye effekty v poluprovodnikakh (cf. English above), Leningrad, "Nauka," 1970, 303 pp, ill., 1 r 60 k (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B14K)

Translation: An account is given of contemporary theories of galvanomagnetic and thermomagnetic phenomena in semiconductors. The cases of parabolic and nonparabolic zones are considered, as well as zones with many minima. Much consideration is given to the quantum theory of kinetic effects. The effect is taken into account of the nonparabolicity of the conduction zone on the kinetic effects in quantizing the magnetic field. The basic conclusions of the Shubnikov-de Gaez theory of oscillations, and of magnetophonon oscillations, are discussed in detail. The quantum theory is developed for the Nernst-Ettinghausen effect. An account is given of the classic and quantum theories of galvanomagnetic and thermomagnetic phenomena which involves all models of the energy zone that are significant in practice. 25 ill. 11 tab. 365 ref. Annotation.

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USSR

UDC 8.74

ASKEROV, CH. I., IBRAGIMOV, T. A., POPOV, A. S.

"Minimizing the Flow Charts of Algorithms Considering the Shift Distribution of the Operators"

V sb. Teor. kibernetika (Cybernetics Theory—collection of works), Kiev, 1971, pp 17-23 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V425)

Translation: A study is made of a method of minimizing the flow charts of algorithms considering the shift distribution of the operators. The flow chart represents a branched algorithmic process and contains the initial and final apex and the operator and logical apexes. By the preceding operator apexes we mean those from which there are paths in the flow chart not containing the operators leading to the given apex. By the shift distribution of the operators we mean the defined dependence of the logical apexes on the operator apexes. The corresponding minimization algorithm is presented which consists in the following. First, the apexes isolated from the beginning of the flow chart are eliminated. Then for each logical apex the operator apexes preceding it on the flow chart are found: if there are no such logical apexes on the paths from them, they are recorded in a list; if they exist, then depending on the situation the counter and the specially introduced characteristic of trafficability of the paths of the

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USSR

ASKEROV, CH. I., et al., Teor. kibernetika, Kiev, 1971, pp 17-23

logical apex assume the corresponding values; if the counter is equal to 2 (overflow), then the following logical apex is investigated; otherwise for each operator apex the list is checked to see whether the given logical apex belongs to the shift distribution. After investigating the entire flow chart, the entire process is repeated until the flow chart remains unchanged. It is noted that a similar problem of minimization can be stated for the algorithm flow chart. The program developed for the M-20 computer can operate in this case faster since the algorithm flow chart can be more tightly packed in the computer memory.

2/2

USSR

UDC: 8.74

ASKEROV, Ch. I., GAMIDOV, V. I., IBRAGIMOV, T. A.

"Minimization of the Number of States of a Microprogram Automaton"

V sb. Avtomaty i upr. setyami svyazi (Automata and Control of Communications Networks--collection of works), Moscow, "Nauka", 1971, pp.142-153 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V526)

Translation: There are various interpretations of logic systems of algorithms (LSA) in terms of finite automata distinguished by the fact that put into correspondence with each internal state are either the individual positions of the LSA, or the individual members or a group of simultaneously realized members of the LSA, or a group of consecutively realized members of the LSA which form a complex microcommand. In this paper, a method is proposed for forming complex microcommands with minimization of their number; this is accompanied by a slight increase in the number of checks of the logic conditions. Authors' abstract.

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USSR

UDC: 51.621.391

ASKEROV, Ch. I.

"Simplifying the Flowcharts of Algorithms With Regard to a Given Distribution of Shifts"

V sb. Diskretn. avtomaty i seti svyazi (Discrete Automata and Communications Networks--collection of works), Moscow, "Nauka", 1970, pp 65-69 (from RZh-Kibernetika, No 1, Jan 71, Abstract No 1V392)

Translation: A method is proposed for simplifying algorithm flowcharts with regard to a predetermined distribution of shifts. The simplification is done directly on the flowcharts, which makes the method suitable for programming. From the given distribution of shifts and transformational formulas, a set of logical conditions is found for each operator of the algorithm flowchart which always take on a definite value after the given operator is performed. Then for each term z_i of the algorithm flowchart, a set of operators u_i is found from which z_i may be reached by a route which does not contain operators. Depending on the sets found, the element z_i may either be struck out of the algorithm flowchart or replaced by ω . This is an iteration process; operation of the algorithm is terminated when the preceding step does not have a single strike-out or substitution of ω for the terms of the algorithm flowchart.

USSR

UDC: 51:621.391

ASKEROV, Ch. I., IBRAGIMOV, T. A.

"Simplifying the Flowcharts of Algorithms With a Given Set of Unused Collections and Distribution of Shifts"

V sb. Diskretn. avtomaty i seti svyazi (Discrete Automata and Communications Networks--collection of works), Moscow, "Nauka", 1970, pp 70-73 (from RZh-Kibernetika, No 1, Jan 71, Abstract No 1V393)

Translation: The authors discuss a method of simplifying the flowcharts of algorithms. The procedure is based on accounting for unused collections of values of the variables (logical conditions), and also on accounting for a given set of distributions of shifts. The method of simplifying algorithm flowcharts consists in finding for each logical condition a function which takes on the true value for those collections of any permissible sequence of collections on which this logical condition may be verified. The simplification is done on the algorithm flowcharts, which makes it more convenient for computerization. Accounting for unused collections and the distribution of shifts makes it possible to reduce the overall number of logical operations. In some instances this may mean that certain terms of the algorithm flowchart are unrealizable and therefore may be eliminated. G. Blokhina.

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USSR

UDC 681.3.001:518.5

ASKEROV, Ch. I., IBRAGIMOV, T. A.

"Simplification of Algorithm Flow Charts for a Given Set of Unused Sets and Given Shift Distribution"

V sb. Diskretn. avtomaty i seti svyazi (Digital Automata and Communications Networks -- Collection of Works), Moscow, Nauka Press, 1970, pp 70-73 (from RZh-Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 2, Feb 71, Abstract No 2B32)

Translation: A method of simplifying algorithm flow charts based on consideration of unused sets of values of variables (logical conditions) and a given set of shift distributions (N_1^0, N_1^1) is investigated. The procedure for simplifying the algorithm flow charts consists in finding the function $(p_j \uparrow^t)^*$ for the logical condition $p_j \uparrow^t$. This function must assume the true value in the sets (from any allowable series of sets) in which the logical condition $p_j \uparrow^t$ can be checked. Consideration of the unused sets and the shift distribution permits reduction of the total number of logical conditions. An example

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USSR

ASKEROV, Ch.I., et al., Diskretn. avtomaty i seti svyazi (Digital Automata and Communications Networks -- Collection of Works), Moscow, Nauka Press, 1970, pp 70-73

of simplification of algorithm flow charts is presented. The bibliography has 4 entries.

2/2

USSR

UDC 681.3.001:518.5

ASKEROV, Ch.I.

"Simplification of the Flow Charts of Algorithms Taking Into Account a Given Shift Distribution"

V sb. Diskretn. avtomaty i seti svyazi (Digital Automata and Communications Networks -- Collection of Works), Moscow, Nauka Press, 1970, pp 65-69 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 2, Feb 71, Abstract No 2B31)

Translation: A method of simplifying algorithm flow charts taking into account a given shift distribution is proposed. The simplification is carried out directly on the algorithm flow chart, which operation greatly simplifies programming. By means of the given shift distribution and the transfer formulas for each operator of the algorithm flow chart, a set of logical conditions is found which, after execution of the given operator, assume values which are always defined. Then, for each member of the algorithm flow chart Z_1 , a set of operators is found from which it is possible to transfer to Z_1 so that the corresponding path does not contain operators. Depending on the sets found, the element Z_1 can be

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USSR

ASKEROV, Ch. I., Diskretn. avtomaty i seti svyazi (Digital Automata and Communications Networks -- Collection of Works), Moscow, Nauka Press, 1970, pp 65-69

either excluded from the algorithm flow chart or replaced by the conditional transfer symbol ω . This process is iterated until the flow chart element is deleted or replaced by ω . The bibliography has 12 entries.

1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--SYNTHESIS AND REACTIONS OF UNSATURATED ORGANOSILICON AND
ORGANOGERMANIUM COMPOUNDS. SYNTHESIS OF DIMETHYL, P-TOLYLHYDRIDOSILANE
AUTHOR--(04)--SHIKHIYEV, I.A., GASANOVA, R.YU., ASKEROV, G.F., RZAYEVA, S.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 817-19
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ORGANIC SYNTHESIS, ORGANOSILICON COMPOUND, ORGANOGERMANIUM
COMPOUND, ORGANIC SILANE, ACETYLENE, ALCOHOL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1199 STEP NO--UR/0079/70/040/004/0817/0819
CIRC ACCESSION NO--AP0128617

UNCLASSIFIED

Z/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0128617
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ME SUB2 SICLH (94.5 G) AND RMGBE
FROM 24 G MG REFLUXED 2 DAYS GAVE AS SHOWN ON MICROFICHE.
FACILITY: INST. NEFTI KHIM. IM. AZIZBEKOVA, BAKU, USSR.

UNCLASSIFIED

USSR

UDC: 8.74

ASKEROV, T. M., FEYZULLAYEV, A. P.

"Principle of Organization of an Information System in a Sectoral Automated Control System"

V sb. Tsifr. vychisl. tekhnika i programmir. (Digital Computer Technology and Programming--collection of works), vyp. 7, Moscow, "Sov. radio", 1972, pp 83-93 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V625)

Translation: The paper describes the principle of organization of an information system in a sectoral automated control system. The principle is based on the method of logic scales. The system is universal both from the standpoint of fields of application, and from the standpoint of types of computers on which it can be realized. The system is described on the example of data collection for the machine building industry. Authors' abstract.

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USSR

A UDC 621.396.946

FORTUSHENKO, A. D., ASKINAZI, G. B., BYKOV, V. L. et al.

"Fundamentals of Technical Planning of Artificial Satellite Communications Systems"

Osnovy tekhnicheskogo proyektirovaniya sistem svyazi cherez ISZ (cf. English above),
Moscow, "Svyaz", 1970, 331 pp, ill. 1 r. 52 k. (from RZh-Radiotekhnika, No 10, Oct
70, Abstract No 10A119 K)

Translation: The authors describe the basic properties of satellite communications systems, their role and position among existing forms of communication, consider the organizational and technical principles of constructing systems, problems of system control, problems associated with the motion of artificial satellites in orbit, and frequency bands suitable for radio communications with satellites. Standards for qualitative indices are given and substantiated. A complete method for calculating the power indices of a communications system is given, and a procedure is developed for computing the parameters of high-frequency channels for lines of communication through artificial satellites. The book is intended for specialists in radio communications and may be of interest for teachers and students in radio engineering academies. 157 illustrations, 18 tables, bibliography of 97 titles. Annotation.

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Acc. Nr:

AP0037010-

Ref. Code: UR 0239

PRIMARY SOURCE: Fiziologicheskii Zhurnal SSSR, 1970, Vol 56,
Nr 2, pp 211-217

ON PHYSIOLOGICAL MECHANISMS OF AMPLITUDE REGULATIONS OF
VOLUNTARY MOVEMENTS IN MAN

Asknaziy, A. A.

Physical Culture Research Institute, Leningrad

The structure of precise movements was analysed. Mechanogram of the movement, its velocity (V) and acceleration (A), and the electromyogram (EMG) of the m. biceps and triceps brachii were recorded.

During the restricted movements the velocity quickly increases to the maximum and does not subsequently decrease. The mechanogram and its derivatives (V and A) were relatively constant in series of movements.

The voluntary reproductive movements, are characterized by simultaneous and higher EMG of antagonistic muscles during the whole abduction. The velocity increases and decreases more smoothly and to a lesser extent.

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The subject attained a very high precision in reproduction, the mistakes being not higher than 5%. However, there was a marked variability of the remaining parameters (V, A, Time, EMG). The parameters of a precise movement are, evidently, controlled during the action, and the precision of reproduction depends not only on perception and remembering of the amplitude but also on perfection of the controlling.

D. n.

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19721943

Acc. Nr:

AP0038114 ^A

Ref. Code: UR 0326

PRIMARY SOURCE: *Fiziologiya Rasteniy*, 1970, Vol 17, Nr 1,
pp 116-122

PECULIARITIES OF HYDRATION OF SEEDS OF VARIOUS COMPOSITION

Askochenskaya, N. A.

K. A. Timiriazev Institute of Plant Physiology, USSR Academy of Sciences, Moscow

; Aksenov, S. I.

and Biology-Soil Department, Moscow State University

Seeds of various species — pea (var. «Ranii zeleny») beans («Triumpf» var.), wheat, («Krasnodarskaya» and «Krasnozernaya» var.) — were studied by the nuclear magnetic resonance technique. It is found that in dormant seeds of all mentioned species when the moisture gradually grows from the original 10—15% to 20—22% in a water vapor atmosphere the seeds retain the two-component signal characteristic of dry seeds; on the other hand when the seeds swell addition of only 2—5% H₂O to the seed weight is sufficient to make the signal one-component. This might be an adaptive reaction of seeds to variation of moisture when the germination trigger mechanism becomes operative under conditions of maximal water supply, such as occurs during spring floods.

On drying of the seeds water of the first, most bound fraction (at 105—110), which

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is characterized by a single component, disappears. Water of the second fraction can be removed from the seeds only with great difficulty even after heating to 120—130°. Vacuum drying without heating almost does not affect the water in the seeds, a result which is determined by peculiarities of the mechanism of water transfer in seeds. The magnitude of the signal from equal amounts of a solution and of seeds was compared and it was found that not all water in the seeds contributes to the resonance. Therefore a third fraction may exist (of hydrated water proper) as well as other fractions which are not recorded by NMR. A comparison of protein and carbohydrate seeds showed that in seeds with a predominance of carbohydrates (wheat) the NMR signal from both water fractions is greater, although the total amount of water is higher in the protein species (bean, pea plants). The latter therefore contain larger amounts of hydrated, strongly bound water which does not contribute to the resonance signal.

It is suggested that hydration in seeds is of a universal nature whereas water in seeds is specific and this ensures vitality of the seeds over prolonged periods of time.

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USSR

UDC 669.16-147:621.746

A
RUTES, V. S., Doctor of Technical Sciences, CHIGRIKOV, M. G., Candidate of Technical Sciences, ASKOL'DOV, V. I., Candidate of Technical Sciences, SALLAD, E. R., Engineer, and TKACHEV, P. M., Engineer, Central Scientific-Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Formation and Migration of Non-Metallic Inclusions During Continuous Steel Pouring"

Moscow, Stal', No 10, Oct 70, pp 395-397

Abstract: A high-melting ZrO_2 tracer is introduced into the metal to clarify the principal sources of admission of non-metallic inclusions during continuous steel pouring -- the inwall of the intermediate ladle, the residue of the furnace slag, and also slag which forms as a result of secondary oxidation of molten metal. An intensive flow of metal into the intermediate ladle, determined by the falling stream, makes flotation of inclusions difficult. These flows can be weakened at a sufficiently high level of metal -- on the order of 600-650 mm -- in the intermediate ladle.

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USSR

RUTES, V. S., ASKOLDOV, V. I., LIBERMAN, A. I., SEMENOV, N. I., USKOLNOV, N. A.,
Central Scientific Research Institute for Ferrous Metallurgy, "Amurstal" Plant

"Economic Effectiveness in the Casting of Ship Steels Beneath a Level in a
Continuous Steel Casting Unit"

Moscow, Metallurg, No 10, Oct 70, pp 20-21

Abstract: Methods of protecting metal in a crystallizer from secondary oxidation during casting of type 10KSNB, 09G2S, 09G2, and other ship steels were studied. The investigations showed that when casting was performed beneath a level of a graphite-based mixture so that the surface of the metal was protected by the heat-insulating mixture, the volume of cleaning of cast billets and of sheets after rolling was reduced, and the rate of final rejection of sheets was decreased. The economic effectiveness of this method is 4.7 rubles per ton of steel.

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USSR

UDC: 617-001.17-022.08

RUEZHANSKIY, Yu. A., and ASLAMOY, A. S., General Surgical Clinic,
Tselinograd Medical Institute

"Complications of a Thermal Burn by Anaerobic Infection"

Leningrad, Vestnik Khirurgii imeni I. I. Grekova, Vol 106, No 4, Apr 71,
pp 111-112

Abstract: A patient was brought in with third and fourth-degree burns over the left arm and the left half of the abdomen, a total of 26% of the body surface. He was brought out of shock after two days and taken to the clinic by airplane in serious condition. Anaerobic infection was suspected but no bacteriological tests were made, which is regrettable. The patient was treated by removal of the necrotic tissue and by transfusion of antigangrene serum, blood and protein blood substitutes. In the course of three months, five skin grafts were done as the wound cleansed itself of necrotic tissue. In all, 1,350 square centimeters were grafted. At the beginning of the treatment the arm was amputated at the shoulder and toward the end the ribs were trepanned. At the time of discharge the scar was entirely covered by epithelium.

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- 28 -

USSR

UDC: 535.373.3

ASLANIDI, Ye. B., TIKHONOV, Ye. A., and SHPAK, M. T.

"The Quenching Mechanism of Fluorescent Organic Dye Solutions in Two-Photon Excitation"

Leningrad, Optika i Spektroskopiya, December 1972, pp 1105-1108

Abstract: A description is given of experiments to determine the mechanism of fluorescence quenching in organic dye solutions under two-photon excitation from a ruby laser. Three dyes of the xanthene group were used in the experiments; their solutions have a quantum fluorescence output of approximately unity, and the spectral position of their maximum long-wave absorption band corresponds approximately to resonance for two-photon absorption of a neodymium laser radiation. Curves plotted for the intensity of the fluorescence as a function of change in excitation power are found to deviate from the square law, and seven causes are listed and explained for this deviation. The diagram of the experimental setup is reproduced along with a textual explanation. It was found that the radiation intensity of the solution is strengthened at the fundamental frequency, thus confirming the presence of a phenomenon of forced emission at this frequency.

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1/3 030 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--MANIFESTATION OF A PATHOLOGICAL POINT IN THE SPATIAL DISTRIBUTION
OF HUMAN CORTICAL BIOPOTENTIALS -U-
AUTHOR--ASLANOV, A.S.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI, 1970, VOL 20, NR 3, PP
634-643
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BIOELECTRIC PHENOMENON, NEUROSIS, COMPUTER APPLICATION,
PATHOLOGY, CEREBRAL CORTEX

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1999/1738

STEP NO--UR/0247/70/020/003/0634/0643

CIRC ACCESSION NO--AP0123541

UNCLASSIFIED

2/3 . 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123541

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SPATIAL CORRELATION OF BIOPOTENTIALS IN DIFFERENT REGIONS OF THE CEREBRAL CORTEX WAS STUDIED ON PATIENTS SUFFERING FROM OBSESSIVE NEUROSIS, BEFORE AND AFTER ANIMATION OF THEIR PATHOLOGICAL DYNAMIC STRUCTURE (PATHOLOGICAL POINT) BY VERBAL STIMULATION. CORTICAL ELECTRICAL ACTIVITY WAS STUDIED BY MEANS OF AN ENCEPHALOSCOPE WITH 50 LEADS. CORRELATION OF BIELECTRICAL ACTIVITY WAS STUDIED IN PAIRS AT ALL THE 50 RECORDED CORTICAL POINTS. THE COINCIDENCE OF DIRECTION OF CHANGES IN BIOPOTENTIAL OSCILLATIONS FROM MOMENT TO MOMENT DURING A CERTAIN LENGTH OF TIME WAS USED AS CRITERION OF CORRELATIVE RELATIONS. THE COEFFICIENTS WERE CALCULATED ON A UNIVERSAL ELECTRIC COMPUTER. THE EFFECT OF WORDS "ANIMATING" THE PATHOLOGICAL POINTS WAS, AS A RULE, ACCOMPANIED BY A FURTHER INCREASE OF THE LEVEL OF SPATIAL SYNCHRONIZATION OF BIOPOTENTIALS. SYNCHRONIZATION INCREASED ON A LARGE TERRITORY OF THE CORTEX, PARTICULARLY SO IN ITS ANTERIOR PARTS. THE PREDOMINANT INVOLVEMENT OF THESE AREAS IN THE CORTICAL RESPONSE TO A CONFLICTING WORD IMPLIED THAT THEY WERE MOSTLY RELATED TO THE FORMATION OF MORBID SYMPTOMS. BIELECTRICAL CHANGES, WHICH ACCOMPANIED THE ACTIVATION OF THE PATHOLOGICAL DYNAMIC STRUCTURE, WERE EXTREMELY STABLE. THEIR EXTENSIVE SPREAD ATTESTED THAT THE PATHOLOGICAL POINTS SHOULD NOT BE CONSIDERED ROUGHLY ANATOMICALLY, FOR THEY ARE COMPLEX DYNAMIC STRUCTURES, "CONSELLATION OF CENTRES", SPREADING IN THE CORTEX.

UNCLASSIFIED

3/3 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123541

ABSTRACT/EXTRACT--THE DATA OBTAINED SUGGEST THAT THE STUDY OF SPATIAL SYNCHRONIZATION OF BIOPOTENTIALS OPENS UP NEW OPPORTUNITIES FOR STUDYING HIGHER NERVOUS ACTIVITY IN NEURO PSYCHI DISEASES, NOTABLY THOSE WHOSE APPEARANCE AND DEVELOPMENT IS LINKED WITH THE EXISTENCE OF PATHOLOGICAL POINTS, OR PATHOLOGICAL DYNAMIC STRUCTURES IN THE CEREBRAL CORTEX.

FACILITY: LABORATORY OF ELECTROPHYSIOLOGY OF CONDITIONED REFLEXES, INSTITUTE OF HIGHER NERVOUS ACTIVITY AND NEUROPHYSIOLOGY, USSR ACADEMY OF SCIENCES, MOSCOW.

UNCLASSIFIED

USSR

UDC 542.91:547.1'118

ABDUVAKHADOV, A. A., ZUPAROVA, K. M., GODOVIKOV, N. N., KABACHNIK, M. I., ASLANOV, Kh. A., and SADYKOV, A. S., Institute of Organoelemental Compounds, Academy of Sciences USSR, and Tashkent State University imeni V. I. Lenin, Tashkent

"The Synthesis of Some O-Ethyl-S-alkyl Alkylthiophosphonates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 73, pp 1659-1661

Abstract: It was established in earlier work by the authors that the anticholinesterase activity of O-alkyl-S-alkyl methylthiophosphonates increases with an increasing length and degree of branching of the alkyls at O and S. However, the effect of the alkyl at P on the physiological activity of compounds of this type had not been studied. To carry out this study, the O-ethyl-S-butyl alkylthiophosphonates EtO(R)P(O)SBu (I; R = Et, n-Pr, n-Bu), O-ethyl-S-(beta-ethyl-mercaptoethyl) alkylthiophosphonates $\text{EtO(R)P(O)SC}_2\text{H}_4\text{SEt}$ (II; R = Et, n-Pr, n-Bu), and methylsulfomethylates of II (III) were synthesized. O,O-Diethyl alkylphosphonates $(\text{EtO})_2\text{P(O)R}$, which were prepared starting with diethyl phosphite as

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ABDUVAKHABOV, A. A., et al, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 73, pp 1659-1661

described in earlier work, formed the acid chlorides EtO(R)P(O)Cl (IV on being reacted with PCl_5 . IV, on being reacted with butyl-mercaptan and beta-mercaptodiethyl sulfide, yielded I and II, respectively. Compounds III were obtained by reacting II with dimethyl sulfate. The physical properties of the compounds synthesized are listed in tables.

USSR

UDC 547.944/945

ABDUSALAMOV, B. A., ASLANOV, KH. A., SADYKOV, A. S., and KHOROSHKOVA, O. A.,
Tashkent Order of the Labor Red Banner State University imeni V. I. Lenin

"Investigation of the Alkaloid Content of Sophora Japonica"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 5, 1972, p 658

Abstract: The alkaloids were extracted from dried, ground seeds of Sophora japonica L. After deoiling with petroleum ether, the seeds were treated with a methanol solution of potassium hydroxide, dried and extracted with chloroform. After reextraction with sulfuric acid and alkalization with 10% KOH, the material was again extracted with chloroform to yield a group of eight alkaloids, from which it was possible to identify citizine, N-methylcitizine, sophocarpine, and matrine.

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USSR

UDC 539.194.536.27

YUNUSOV, T. K., LEONT'YEV, V. B., KAMAYEV, F. G., ASLANOV, KH. A., SADYKOV, A. S., Tashkent Order of the Red Banner of Labor State University imeni V. I. Lenin

"Conformational Conversions of Lupinin and Tropin Alkaloids During the Formation of N-Oxides"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 4, 1972, pp 477-483

Abstract: Experiments were performed in which N-oxides of lupinin and tropin were obtained under light conditions by mixing the initial bases with 5% H_2O_2 at room temperature. Lupinin forms two isomeric N-oxides the separation of which is realized by solubility, and the individuality is checked by chromatography on a thin layer of Al_2O_3 (the benzene-ether-methanol system, 5:2:1).

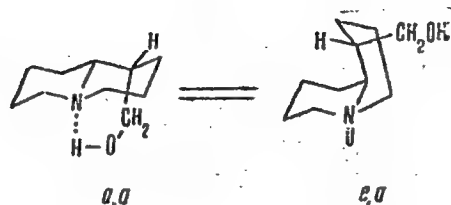
The infrared, mass and paramagnetic resonance spectral data indicate that the first isomer $N \rightarrow O$ of lupinin has trans-conformation with a, a $N \rightarrow O$, the axial- CH_2OH group with an intramolecular hydrogen bond between $\rightarrow N \rightarrow O$ CH_2OH , and the second isomer, cis-conformation with a, e $N \rightarrow O$, axial CH_2OH

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YUNUSOV, T. K., et al., Khimiya Prirodnikh Soyedineniy, No 4, 1972, pp 477-483

and with an intramolecular hydrogen bond between $>N \rightarrow O$ and the CH_2OH fragments:



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USSR

UDC 547.944/661.2

ASLANOV, KH. A., ISHBAYEV, A. I., INOYATOVA, K., YUSUPOV, SH., SADYKOV, A. S.,
and ZAKHAROV, V. P., Order of the Labor Red Banner Tashkent State University
Imeni V. I. Lenin

"New Method for Isolation of the Anabasis Aphylla Alkaloids"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 3, 1972, pp 324-328

Abstract: A new method has been developed for isolation of individual Anabasis aphylla alkaloids from technical anabasin sulfate. Direct extraction of anabasin sulfate with chloroform yields aphylline, aphyllidine, and some anabasin. The major portion of anabasin and lupinine is obtained by converting them to nitroso derivatives followed by hydrolysis with 18% hydrochloric acid at 98-100°C. Also a modification was developed for production of the anabasin sulfate. The commonly used sulfation method required 40% H₂SO₄ at 70-80°C, leading to considerable hydrolysis of the alkaloids. This could be avoided preserving most of the alkaloids by the use of 40% H₂SO₄ at 50-60°C.

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USSR

UDC 547.94 + 543.43

ISHBAYEV, A. I., ASLANOV, KH. A., SADYKOV, A. S., and RAMAZANOVA, M. A., Order of the Labor Red Banner Tashkent State University Imeni V. I. Lenin

"Study of the Quinolizidine Alkaloids by the Method of Optical Rotatory Dispersion (ORD). I. ORD of Lupinin, Citizin, Spartein Group of Alkaloids, and Aphylinic Acid"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 3, 1972, pp 328-333

Abstract: ORD curves of Spartein, Lupinin, Citizin group of alkaloids and some derivatives of aphylinic acid were studied. Among the group of α -pyridone ring containing compounds a higher molecular amplitude was exhibited by the opimers with a trans-quinolizidine junction of the nuclei than with the cis-isomers. It has been shown that alkaloids with a lactam group in the external ring have a higher molecular amplitude than corresponding compounds with an $>N-C=O$ group at the internal ring. A relationship has been shown between the form, sign and molecular amplitude of the curves and the type of a build-up of quinolizidine rings, as well as of the molecular rotation and the location of a double bond in ring A or D. The derivatives of Lupinin and aphylinic acid have a smooth curve with minor anomalies shifted towards longer wavelength in case of the aphylinic acid derivatives.

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USSR

UDC 547.944/945

PRIMUKHAMEDOV, I., ASLANOV, KH. A., and SADYKOV, A. S., Tashkent Order of the Labor Red Banner State University Imeni V. I. Lenin, Tashkent Pharmaceutical Institute

"Alkaloids From the Roots of Saphora Griffithii"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 3, 1972, pp 398-399

Abstract: After extraction with benzene and chromatography on alumina column, roots of Saphora Griffithii yielded citizine, N-methylcitizine, and matrine. All products were identified by comparative IR spectroscopy.

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- 4 -

USSR

UDC 1 947

ABDUVANKHABOV, A. A., ASLANOV, Kh. A., SADYKOV, A. S., and INOYATOVA, K.,
Tashkent State University imeni V. I. Lenin

"Lupinine Esters of O-Alkylmethylphosphonic and O,O-Diethylthiophosphoric
Acids"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 6, 1970, pp 771-772

Abstract: To determine anticholinesterase activity, the authors synthesized
lupinine esters of phosphoric acids: O-ethyl-O-lupinanmethylphosphonate,
O-n-butyl-O-lupinanmethylphosphonate, O,O-diethyl-S-lupinanthiophosphate,
and iodomethylates of O,O-diethyl-S-lupinanthiophosphate and O-n-butyl-O-
lupinanthiophosphonate.

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USSR

UDC 947.94

TOREMURATOV, K., ABDUVAKHADOV, A. A., ~~ASLANOV, Kh. A.~~ and SADYKOV, A. S.,
Tashkent State Univeristy imeni V. I. Lenin

"New Phosphorus-Containing Esters of N(β -ethoxy)-anabasine and Lupinine"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 6, 1970, pp 772-773

Abstract: Phosphorus esters of N(β -ethoxy)-anabasine and lupinine are synthesized in a search for cholinolytics: (N(β -ethyl-0-diphenylphosphonyl)-anabasine, methylsulfomethylate of N(β -ethyl-0-diphenylphosphonyl)-anabasine, N(β -ethyl-0,0-isoamylmethylthiophosphonate)-anabasine, 0-diphenylphosphonyl lupinine, and iodomethylate of 0-diphenylphosphonyl lupine. Some of the physicochemical constants of these esters are tabulated.

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- 50 -

USSR

UDC: 547.944.954

A
ASLANOV, KH. A., ZAYNUTDINOV, U. N., KUSHMURADOV, YU. K. and SADYKOV, A. S.,
Tashkent State University imeni V. I. Lenin, Tashkent, Ministry of Higher and
Secondary Specialized Education UzSSR

"New Didehydro-Derivatives of Matrine [Isolupanine] Alkaloids"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 3, 1970, p 381

Abstract: From matrine via 5-hydroxy-6,7-dehydromatrin, a matrine series didehydro-compound where double bonds encompass three or four optical centers was synthesized. Dehydration of 5-hydroxy-6,7-dehydromatrine with P_2O_5 by the Bol'man method led to a complex mixture of compounds, while dehydration in an n-xylol solution led to the matrine didehydroderivative with a 40% yield. This study suggests that in selecting conditions for hydrogenation of the didehydro product several new stereoisomers of matrine can be obtained.

173 009 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--PRODUCT OF THE CONDENSATION OF LUPININIC ACID WITH PIPERIDINE -U-
AUTHOR--(04)-ASLANOV, KH.A., KASYMOV, T.K., SADYKOV, A.S., ISHBAYEV, A.I.
COUNTRY OF INFO--USSR
SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (4), 492-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ORGANIC ACID, ALKALOID, HETEROCYCLIC NITROGEN COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3006/0947 STEP NO--UR/0409/70/000/004/0492/0494
CIRC ACCESSION NO--AP0134668
UNCLASSIFIED

2/3 009

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134668

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO A SOLN. OF 11 G LUPINIC ACID IN 120 ML PIPERIDINE WAS ADDED PORTIONWISE 46 G P SUB2 O SUB5 AND THE MIXT. REFLUXED 3 HR TO YIELD 75.5PERCENT D I (X EQUALS O, R EQUALS PIPERIDINO) (D II), B SUB5 228-30DEGREES, (ALPHA) SUBD 54.2DEGREES (ETOH); PERCHLORATE M. 199-200DEGREES (H SUB2 O); HCL SALT M. 114-15DEGREES (ME SUB2 CO). II WAS HYDROLYZED BY 16 HR REFLUX IN 20PERCENT H SUB2 SO SUB4. II (3 G) IN 50 ML ET SUB2 O WAS ADDED TO A WARM SOLN. OF 1 G LIALH SUB4 IN 150 ML ET SUB2 O AND THE MIXT. HEATED 3 HR TO YIELD D I (X EQUALS H SUB2, R EQUALS PIPERIDINO) (D III), B SUB10 158-60DEGREES, (ALPHA) SUBD 196.5DEGREES (ETOH); PICRATE M. 205-6DEGREES (ETOH). III WAS ALSO OBTAINED BY HEATING 3.9 G BROMOEPILOPINANE (D IV) AND 20 ML PIPERIDINE IN A SEALED TUBE AT 15-60DEGREES FOR 6 HR. A SOLN. OF 10 G D I (X EQUALS O, R EQUALS OH) IN 200 ML WAS SATD. WITH HCL FOR 8 HR, THEN KEPT 24 HR AND REFLUXED 4 HR TO YIELD 55PERCENT D I (X EQUALS O, R EQUALS OET) (D V), B SUB4 139-40DEGREES, (ALPHA) SUBD 48DEGREES (ETOH). A SOLN. OF 4.7 G V IN 70 ML ET SUB2 O WAS ADDED TO A WARM SOLN. OF 2 G LIALH SUB4 IN 300 ML ET SUB2 O AND THE MIXT. REFLUXED 4 HR TO YIELD 98.4PERCENT D I (X EQUALS H SUB2, R EQUALS OH (D VI), M. 79-80DEGREES, (ALPHA) SUBD 36.8DEGREES (ETOH). TO A SOLN. OF 3.5 G D VI IN 60 ML C SUB6 H SUB6 WAS ADDED PORTIONWISE 15 G PBR SUB5 AND THE MIXT. REFLUXED 2 HR TO YIELD 98.5PERCENT D IV, B SUB2 126-30DEGREES (ALPHA) SUBD 61DEGREES (ETOH). LUPININE (11 G) WAS BROMINATED UNDER SIMILAR CONDITIONS TO YIELD 99PERCENT L IV, B SUB2 126-30DEGREES, (ALPHA) SUBD MINUS 27.2DEGREES (ETOH); PICRATE M. 134-5DEGREES (H SUB2 O).

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3/3 009

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--1P0134668

ABSTRACT/EXTRACT--L III WAS OBTAINED SIMILARLY TO D III IN 97PERCENT
YIELD, 8 SUB10 158-60DEGREES, (ALPHA) SUBD MINUS 37DEGREES (ETOH);

PICRATE 113-14DEGREES (ETOH).

FACILITY: TASHKENT, GOS. UNIV.

IM. LENINA, TASHKENT, USSR.

UNCLASSIFIED

1/2 045
UNCLASSIFIED
TITLE--STRUCTURE OF EUROPIUM TETRAKIS BENZOYLACETONATE USABLE FOR
OBTAINING A LASER EFFECT -U-
AUTHOR--(GS)-ARISTOV, A.V., MASLYUKOV, YU.S., GRYAZNOVA, M.I., DOMRACHEV,
G.A., ASLANOV, L.A.
COUNTRY OF INFO--USSR
SOURCE--TECH. EKSP. KHIM. 1970, 6(1), 61-6
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--EUROPIUM COMPOUND, LUMINESCENCE SPECTRUM, X RAY STUDY, COMPLEX
COMPOUND, LASER EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1176
CIRC ACCESSION NO--AP0128598
STEP NO--UR/0379/70/006/001/0061/0066
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

272 045

IRC ACCESSION NG--AP0128598
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

ET SUB2 NH SUB2 (EU(BZAC) SUB4)
AND C SUB5 H SUB11 NH(EU(BZAC) SUB4), WHERE HBZAC EQUALS BENZOYLACETONE
AND C SUB5 H SUB11 NH PRIME POSITIVE EQUALS PIPERIDINIUM, WERE
SYNTHESIZED BY THE METHOD OF DHAUMIK (1964) AND THEIR LUMINESCENCE
SPECTRA WERE TAKEN AT 77DEGREESK. STRUCTURES OF THE COMPS. AND OF THE
(EU(BZAC) SUB4) PRIME NEGATIVE ION WERE DETD. BY X RAY STRUCTURAL ANAL.
SPLITTING OF THE GROUND STATE LEVEL FOR THE EU ION CORRESPONDS TO A C
SUB2 SYMMETRY BUT IT MAY ALSO BE DUE TO THE C SUB4 SYMMETRY OF THE EUO
SUB8 GROUP. BOTH COMPLEXES GIVE A STABLE LASER EFFECT AT 613 NM WHICH
CORRESPONDS TO A TRANSFER FROM THE PRIME5 D SUBO LEVEL TO THE X OR Y
COMPONENT OF THE PRIME7 F SUB2 LEVEL SPLIT BY THE CRYST. FIELD OF C SUB2
OR C SUB4 SYMMETRY.

FACILITY: MUSK. GUSUNIV., MOSCOW, USSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--11SEP70

1/2 023

TITLE--CRYSTAL AND MOLECULAR STRUCTURE OF ACIDIC GADOLINIUM TETRAKIS
(BENZOYLACETONATE) -U-

AUTHOR--BUTMAN, L.A., ASLANOV, L.A., PORAYKOSHITS, M.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. STRUKT. KHIM. 1970, 11(1) 46-53

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CRYSTAL STRUCTURE, MOLECULAR STRUCTURE, GADOLINIUM COMPOUND, X
RAY STUDY, CRYSTAL LATTICE, COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1987/0313

STEP NO--UR/0192/70/011/001/0046/0053

CIRC ACCESSION NO--AP0103968

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--11SEP70

2/2 023

CIRC ACCESSION NO--AP0103968

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE STRUCTURE OF HGD(BA) SUB4 TIMES XPIP (X APPROXIMATELY EQUAL TO 1) WAS DETD. BY SINGLE CRYSTAL X RAY METHODS, WHERE HBA IS (PHCG) SUB2 CH SUB2 AND PIP IS PIPERIDINE. THE MONOCLINIC LATTICE PARAMETERS ARE A 31.568, B 20.214, C 10.692 ANGSTROMS, AND GAMMA EQUALS 138DEGREES 10 MINUTES; Z EQUALS 4, AND THE SPACE GROUP IS B2-B. THE GD ATOM IS LOCATED ON A CRYSTALLOGRAPHIC 2 FOLD AXIS AND IS SURROUNDED BY 8 O ATOMS FROM 4 BA RINGS (GD-O EQUALS 2.38-2.42 ANGSTROMS). THE COORDINATION POLYHEDRON IS A TETRAGONAL ANTIIPRISM WITH THE RECTANGULAR FACES PARALLEL TO THE 2 FOLD AXIS. THE PH RINGS OF THE BA IONS ARE ALMOST PARALLEL TO THE PLANES OF THE CHELATE RINGS. THE CHELATE RINGS ARE FOLDED BY 26-29DEGREES ABOUT THE O-O LINE. THE GD COMPLEXES ARE PACKED SO THAT THERE ARE CHANNELS BETWEEN THEM WHICH CONTAIN THE DISORDERED PIPERIDINE MOL. THE MOL. PACKING EXPLAINS HOW PIPERIDINE IS LOST WITHOUT DESTROYING THE CRYSTALS.

UNCLASSIFIED

USSR

UDC 621.4/.6:533.6

KOPEYKA, P. I., ASLANOV, S. K.

"On the Condensation of Water Vapor in the Mixing Zone of Satellite Gas Flows of High Velocity and High Temperature"

Fiz. aerodispers. sistem. Mezhved. nauch. sb. (Physics of Aerodispersion Systems. Interdepartmental Scientific Collection), 1971, No. 4, pp 106-116 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6B411)

Translation: The flow of gas from an axisymmetric nozzle of finite dimensions into a satellite gas flow using the simplified design of G. N. Abramovich excluding the transition segment is considered. A solution is found for the plane problem of turbulent mixing of satellite gas flows of high velocity and high temperature. An expression is obtained for the axial velocity in the problem of the turbulent mixing of a jet injected from a point source with the satellite gas flow. The solution of these problems is applied to the actual problem of the flow from a nozzle of finite dimensions into a satellite gas flow. The position of the source is at the point of intersection of the external boundaries of the initial segment. The region of turbulent mixing

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USSR

KOPEYKA, P. I., ASLANOV, S. K., Fiz. aerodispers. sistem. Mezhved. nauch. sb., 1971, No. 4 , pp 106-116

can be fully calculated on the basis of these formulas. The parameters for turbulent mixing that were found are applied to a calculation of the super-saturation function along the axis of the tube. Authors abstract.

2/2

- 88 -

USSR

UDC 534.222.2

ASLANOV, S. K., KOPEYKA, P. I.

"Concerning the Characteristics of Detonation Spin Models in Different Hot Media"

V sb. Fiz. aerodispersn. sistem (Physics of Aerodispersion Systems -- Collection of Works), No. 5, Kiev, Kiev University, 1971, pp 101-106 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6B222)

Translation: Theoretical models of two possible modes for detonation combustion in a spin regime are constructed on the basis of gasdynamic relationships in the plane of the involute of the inner surface of the tube. Models consist of the leading process of the transverse detonation front of Chapman-Jouguet of finite extent and of wave configurations adjoining the ends of the transverse front that were generalized by the authors. It is shown that additional combustion (more than the limiting combustion) in the oblique Mach wave of the trinary generalized configuration with the reflected wave as a transverse Chapman-Jouguet configuration leads to decay of this configuration with the formation of some other complex of waves and the formation of another stationary spin

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ASLANOV, S. K., KOPEYKA, P. I., Fiz. aerodispersn. sistem, No. 5, Kiev, Kiev University, 1971, pp 101-106

scheme. The magnitude of energy release in the oblique wave is strongly dependent on the composition of the mixture. A calculation of the parameters of the nucleus of the spin detonation is in good agreement with experimental data in the literature. 5 ref. Authors abstract.

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UDC 532.517.4

KOPEYKA, P. I. and ASLANOV, S. K., Odessa State University imeni II Mechnikov

"On Turbulent Mixing at the Boundary of Adjacent High-Velocity, High-Temperature Gas Streams"

Kiev, Gidromekhanika, Akademiya Nauk Ukrainskoy SSR, No 21, 1972, pp 46-51

Abstract: Theoretical investigation of turbulent mixing of two semiinfinite high-velocity, high-temperature gas streams is performed. Compressibility is taken into account. Viscosity effects are neglected.

The analysis is based on the continuity equation and two energy equations. After several transformations the equations are put into the form of a Tollmin equation (21) and a differential equation (22), which are then solved using the boundary conditions.

The analysis results show that an increase of adjacent stream's velocity is equivalent to a decrease of its temperature and causes the decrease of the angle between the turbulent zone boundary and the line of contact.

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UDC 534.222.2

ASLANOV, S. K., KOPEYKA, P. P., Odessa State University

"On Fulfillment of the Law of Conservation of Moment of Momentum in Spin Detonation"

Kiev, Dopovidi Akademiy nauk Ukrainiskoy RSR, Seriya A. Fiziko-tekhichni ta matematichni nauki, No. 9, Sep 71, pp 819-822

Abstract: Satisfaction of the law of conservation of moment of momentum is discussed for spin detonation proposed by the authors as a model of the nucleus that is an essentially generalized shock-detonation triple configuration. The generalization consists of introducing into the triple shock-detonation configuration a centralized rarefaction wave which follows the transverse detonation wave of Chapman-Jouguet. The additional use of the kinetic moment theorem made it possible to close the problem and determine theoretically the slope of the incident shock wave to the transverse cross section of the tube. A criterion for detonation yield was obtained for the spin regime. A computer calculation was made for the flow in the region of the triple point of the generalized shock-detonation configuration. All parameters of the gas flow

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ASLANOV, S. K., KOPEYKA, P. P., Dopovidi Akademiy nauk Ukrainskoy RSR, Seriya A. Fiziko-tekhichni ta matematichni nauki, No. 9, Sep 71, pp 819-822

that were calculated are in good agreement with the results of B. V. Voytsekhoskiy, V. V. Mitrofanov and M. Ye. Topchiyan (Struktura fronta detonatsii v gazakh [Structure of the Detonation Front in Gases], Novosibirsk, Publishing House of the Siberian Department of the Academy of Sciences USSR, 1963). Especially good agreement was noted between the oscillograms and the pressures calculated theoretically.

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ASLANOV, S. K., KOPEYKA, P. I.

"Gas Dynamics of Spin Detonation"

Tr. II Resp. Konf. po Aero-gidromekh., Teploobmenu i Massoobmenu. Sekts. "Aerodinamika Bol'sh. Skorostey" [Works of II Republic Conference on Aero-Hydromechanics, Heat Exchange and Mass Exchange. Section on "Aerodynamics of High Velocities"], Kiev University Press, Kiev, 1971, pp 186-191, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 B149 by O. K. Rozanov).

Translation: In contrast to existing models, a plan for the nucleus of spin detonation is suggested, the basic element of which is the finite front of self-sustaining detonation located between the following generalized configurations of shock-detonation discontinuities at its ends: binary with combustion in the direct self-sustaining wave and trinary with combustion in two waves (direct transverse self-sustaining and slanted supercompressed). The leading process in the propagation of detonation spin is considered to be the self-sustaining detonation front which accelerates the combustion products to the speed of sound relative to its leading edge, so that the rarefaction waves following it have no influence on the detonation front.

Generalization of the configurations arising at the ends of the primary detonation wave consists in supplementary introduction to the plan of intersection of the waves of the reaction fronts and the centered rarefaction wave.

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ASLANOV, S. K., KOPEYKA, P. I., Tr. II Resp. Konf. po Aero-gidromekh., Teploobmenu i Massoobmenu. Sekts. "Aerodinamika Bol'sh. Skorostey," Kiev University Press, Kiev, 1971, pp 186-191.

The problem of construction of the structure of detonation spin is solved under one additional condition: during propagation of spin detonation through the tube, due to the absence of a summary moment of external forces, the momentum should remain constant. In the planar case, this condition is reduced to the condition that the projection on the plane of the cross section of the summary momentum vector of the gas disappears in the area of the nucleus of spin detonation. The initial data for calculation used were the Mach number of the gas mixture and the slope of the trajectory of the trinary singular point to the transverse cross section.

The solution of the system of three transcendental equations with variable adiabatic indices formed was produced by a combination of the method of successive approximations with the coordination descent method. The results of calculation of the parameters of the spin detonation nucleus for a mixture of $2\text{CO} + \text{O}_2$, $2\text{H}_2 + \text{O}_2$ and $6.7\% \text{C}_2\text{H}_2 + 10\% \text{O}_2 + 83.3\% \text{Ar}$ are presented in a Table. Good correspondence is noted between calculated values of pressure in all areas of spin and experimental data produced by other authors. It is emphasized that the slope angle of the incident shockwave to the transverse cross section of

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ASLANOV, S. K.; KOPEYKA, P. I., Tr. II Resp. Konf. po Aero-gidromekh.,
Teploobmenu i Massoobmenu. Sekts. "Aerodinamika Bol'sh. Skorostey," Kiev
University Press, Kiev, 1971, pp 186-191.

a tube was determined purely analytically for the first time. The values of
slope agree satisfactorily with experimental data. 9 Biblio. Refs.

USSR

UDC 534.222.2

ASLANOV, S. K., KOPEYKA, P. I.

"Problem of Constructing the Closed Theory of Spinning Detonation"

V sb. 3-y Vses. simpozium po goreniyu i vzryvu, 1971 (Third All-Union Symposium on Combustion and Explosion, 1971--collection of works), Chernogolovka, 1971, pp 200-202 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11B131)

Translation: A two-dimensional model of detonation spin was constructed in the convolution plane of the inside surface of the detonation tube. It is proved that the requirements of the conservation laws are satisfied only by introducing a self-similar expansion wave into this model in addition to the system of compression shocks. The expansion wave is centered at the point of intersection of the shocks and directly follows the Chapman-Jouguet detonation. On the basis of this model, with the given initial state of the mixture, the axial propagation rate of the spinning detonation and the rotation frequency of the spinning detonation core, the angles of inclination of the shocks and other parameters of the two dimensional structure of the detonation wave are calculated. The calculated data are compared with the experimental data. Good comparison of these

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